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(71) Applicant  
Raffaele Giordani SpA (Italy),  
40033 Casalecchio Di Reno, Via Cimarosa 5, Bologna, Italy

(72) Inventors  
Gloria Giordani,  
Aldo Grossi

(74) Agent and/or Address for Service  
Urquhart-Dykes and Lord,  
47 Marylebone Lane, London W1M 6DL

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## (54) Pushchair with reclinable backrest

(57) The backrest 36 is supported on side frames 41 which are in turn hinged to side members 51 supporting a seat base and side walls 37; to allow angular adjustment of the backrest with respect to the seat base, a slotted plate 72 is provided at each side of the chair connecting the backrest with the side walls a pin passing through the slot and a screwed knob 78 being provided to connect with the pin and allow fixing of the plate 72 is a determined angular position.

The pushchair is foldable by pulling rod 43 upwards against the force of springs 34 which bring together the side frame members 3, 12.

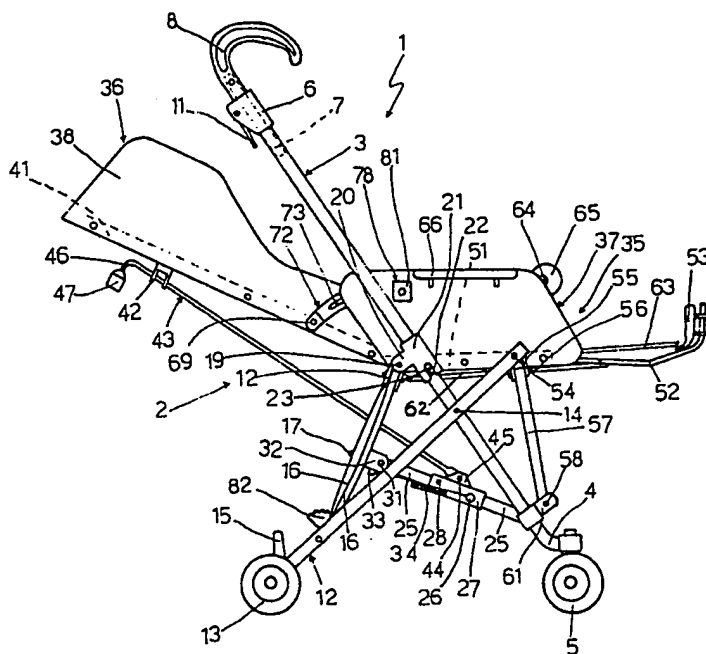


Fig.2

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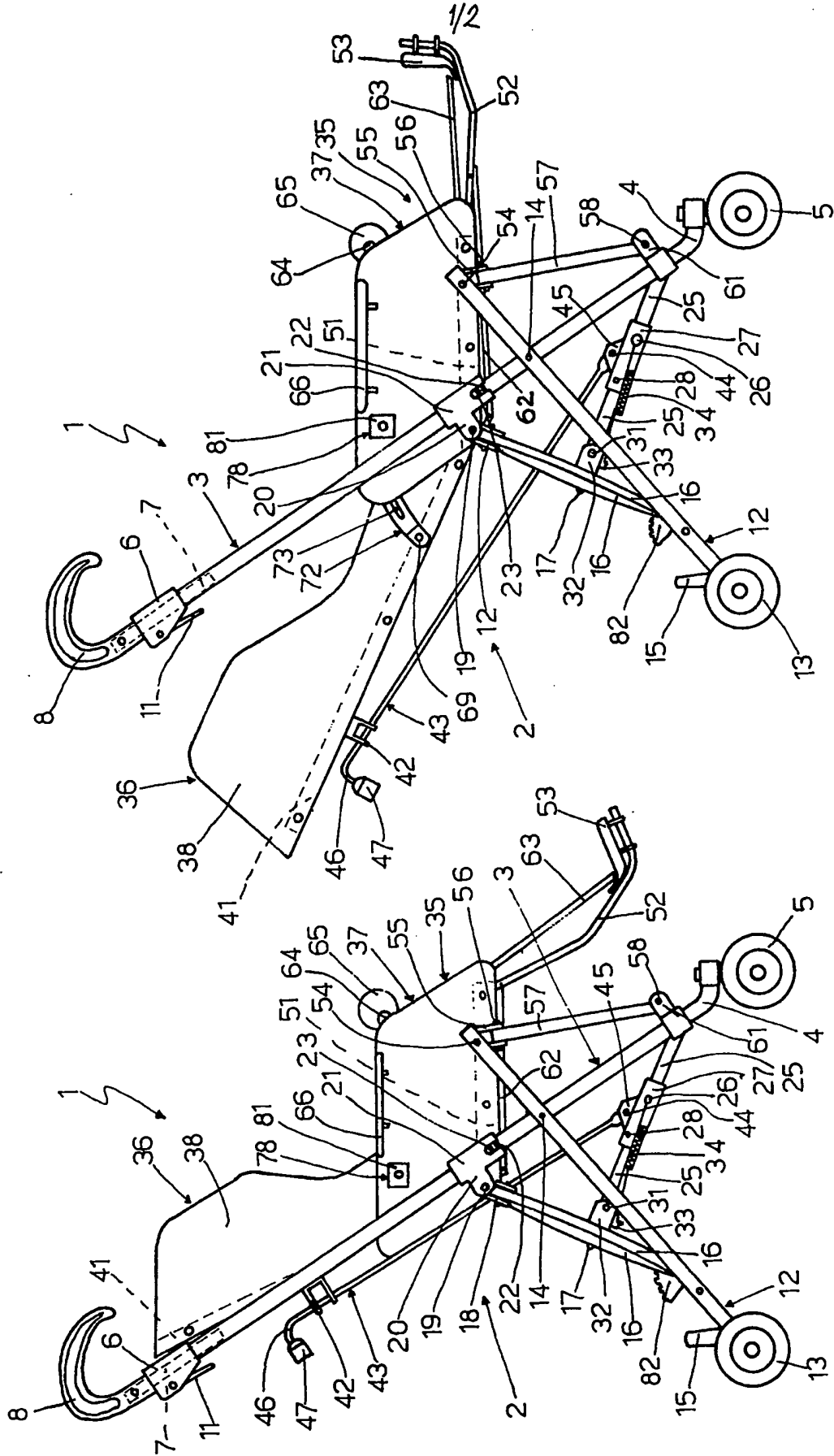


Fig. 2

Fig. 1

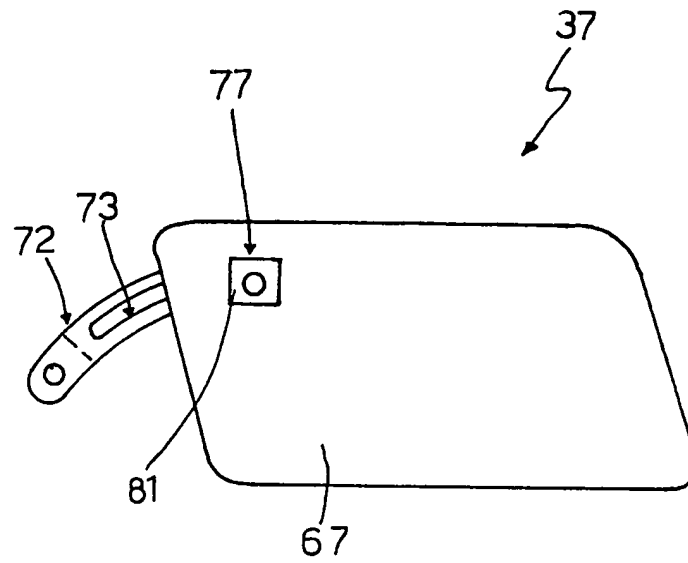


Fig. 3

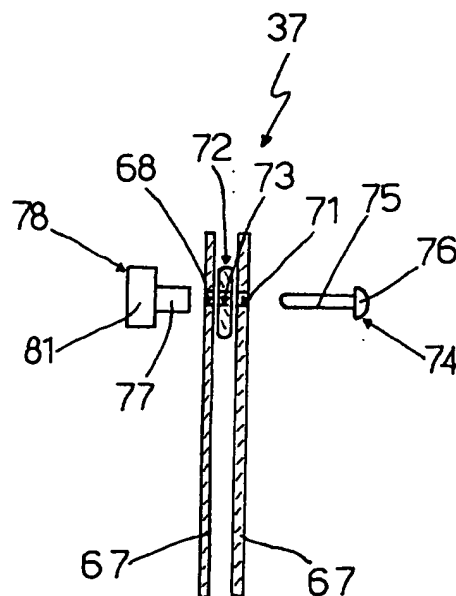


Fig. 4

## SPECIFICATION

## Reclinable pushchair

5 The present invention relates to a reclinable pushchair. The aim of the present invention is to provide a reclinable pushchair that is easy and cheap to make and provides for easy adjustment of the backrest.

10 With this aim in view, the present invention relates to a reclinable pushchair, characterised by the fact that it comprises a frame, a seat having the said backrest supported on a first structure connected to the said frame, a base, two side walls  
15 supported on a second structure hinged to the said first structure in such a manner as to adjust the angle of the latter in relation to the said second structure, and a body for each of the said side walls for connecting the said backrest to the respective said  
20 side wall and so enabling various angular adjustments to be made to the said backrest.

A preferred arrangement of the present invention will now be described, by way of a non-limiting example, with reference to the attached drawings in  
25 which:

*Figure 1* and *2* show side views of a pushchair with the backrest in two different working positions;

*Figure 3* shows a side view of a detail on the *Fig. 1* and *2* pushchair;

*Figure 4* shows a cross section of the *Fig. 3* detail.

Number 1 in *Figs. 1* and *2* indicates a pushchair comprising a fold-up frame 2. The latter comprises  
35 two parallel metal rods 3 converging at an acute angle with the floor and having bottom ends 4 supporting two front wheels 5. Rods 3 are hollow and have the top ends housed inside a respective sleeve 6. Each rod 3 houses the bottom portion of  
40 a metal bar 7 having its top end housed inside grip 8. Bar 7 slides axially to enable the user to set grip 8 to the required height. Sleeve 6 supports a lever 11 for setting bar 7 to the required height on respective rod 3. Frame 2 also comprises two parallel  
45 metal rods 12 converging at an acute angle with the floor and having bottom ends supporting two rear wheels 13. Each rod 12 is assigned a corresponding rod 3, i.e. the top portion of each rod 12 is hinged on a pin 14 to which is hinged the mid  
50 portion of the corresponding rod 3, so as to form a cross. The bottom end of each rod 12 is fitted with a known type of lever 15 designed, when operated, to lock rear wheels 13. Frame 2 comprises two metal bars 16 the mid portions of which are hinged  
55 in cross formation on pin 17. The bottom end of each bar 16 is hinged to a pin 19 supported on a tab 20 of sleeve 21 sliding along rod 3 hinged to the other rod 12. Sleeve 21 is provided laterally and at the bottom with a slot 22 designed to engage with a peg 23 supported on the corresponding  
60 rod 3. Peg 23 locks downward travel of sleeve 21, thus defining the maximum aperture of the cross consisting of bars 16. The bottom portion of rods 3 are connected together by two bars not  
65 shown in the drawing and which are coaxial with

each other when pushchair 1 is in the working position. The said bars are hinged together either directly or by means of an intermediate body now shown in the drawing. Two metal bars 25 connect  
70 pin 17 to the common hinge point or to the intermediate body on the bars connecting the bottom portions of rods 3. One of bars 25 has a first end hinged to the common hinge point or to the intermediate body on the bars connecting rods 3, and a  
75 second end hinged to a pin 26 supported on an intermediate body 27 supporting a second pin 28 to which is hinged a first end of the other bar 25, the second end of which is hinged to a pin 31 supported on a bracket 32 secured to pin 17. In the  
80 working position, bars 25 on pushchair 1 are co-axial with each other. Pin 17 also supports a square 33 extending downwards and to which is fitted a first end of two springs 34, the second ends of which are fitted to the opposite longitudinal ends  
85 of pin 26.

Pushchair 1 also comprises a seat 35 comprising a backrest 36, a base (not shown) and two side walls 37 extending upwards from the side edges of the said base. Both the backrest and base are designed so as to fold up. Backrest 36 is essentially  
90 U-shaped, comprising a centre portion, extending upwards from the rear edge of the base on seat 35, and two side portions 38 parallel to each other and to side walls 37. Frame 2 comprises a structure, usually made of metal and criss-cross in design, for supporting the centre portion of backrest 36. The said structure comprises two side elements 41  
95 (shown by dotted lines in *Figs. 1* and *2*) hinged at the bottom end to pin 19 and fitted to the side edges on the centre portion of backrest 36. The structure supporting the centre portion of backrest 36 is fitted with a bracket 42 designed to guide a metal rod 43 the bottom end of which is hinged to  
100 pin 44 supported on two tabs 45 extending upwards from body 27. Rod 43 also has a bent top end 46 housed in a sleeve 47 forming a grip by which the said rod 43 is slid along its longitudinal axis.

The base of seat 35 is supported by two metal side elements 51 (shown by dotted lines in *Figs. 1* and *2*) which, running along the side edges of the base on seat 35, also support side walls 37. Elements 51 have the rear end hinged to respective  
110 pin 19 and the front end hinged to the top end of a respective metal bar 52 curved with its concave side facing upwards. The bottom portions of bars 52 support a footplate 53. The mid portion of element 51 is supported on a pin 54 to which is hinged the top end of the corresponding rod 12.  
115 On pin 54 is also hinged a bracket 55 supporting a pin 56 to which is hinged the top end of metal bar 57, the bottom end of which is hinged on pin 58 supported on bracket 61 fitted to that of the said bars connecting the bottom portions of rods 3  
120 which is closest to the rod 3 hinged to the said rod 12. From the bottom end of each element 41, a tab (not shown) extends downwards and on which is hinged the rear end of a parallel metal element 64 beneath element 51. The said element 62 has its  
125 front end hinged to the top portion of bar 52. From

the base of seat 35, a tab 63 extends frontwards as far as plate 53, the said tab 63 being equal in width to the distance between the two bars 53. At the front, side walls 37 are connected by a pin 64 covered by a sleeve 65 usually made of plastic. From the top edges of each side wall 37, an appendix 66 extends outwards to form an armrest.

As shown in Figs. 3 and 4, each side wall 37 on seat 35 comprises two essentially-rectangular, parallel plates 67, perpendicular to the floor and fitted at the bottom to element 51. At the rear tip, close to the top edge, plates 67 have respective through holes 68 and 71, of which whole 68 is formed in outer plate 67 and hole 71 in inner plate 67. Between the two plates 67, provision is made for a metal tab 72 having its rear end secured by screw 69 (Fig. 2) to respective element 41. Tab 72 has a curved longitudinal axis, i.e. defined by a portion of a circumference having its centre located at a point beneath seat 35. Along its longitudinal axis, tab 72 is provided with a through slot 73. Holes 68 and 71 are coaxial with each other and, when in use, separated by tab 72. A screw 74, having a threaded shank 75 and head 76, engages, with the said shank 75, hole 71, slot 73 and hole 68 one after the other. Outside hole 68, shank 75 is screwed into a threaded hole formed axially in the shank 77 of knob 78 with head 81. As knob 78 is turned clockwise, an increasing portion of shank 75 emerges from hole 68, thus bringing closer together head 76 on screw 74 and shank 77 on knob 78. As shank 77 is larger in diameter than hole 68, bringing head 76 and shank 77 closer together causes head 76 to press on the innermost plate 67 and shank 77 to press on the outermost plate 67. Plates 67 are thus pressed one on top of the other but, being separated by tab 72, the latter remains locked. When knob 78 is turned anticlockwise, tab 72 is left free to follow the angle of the structure supporting backrest 36 round pin 19. Wall 37 has a cover covering plates 67. Only knob 78 remains outside the said cover which, close to the rear edge of plates 67, has a slot to let out the rear portion of tab 72.

The way in which frame 2 is folded up will now be described with reference to Figs. 1 and 2. Facing a foot on body 82 supported on one of rods 12, the user pulls rod 43 upwards by means of sleeve 47. The upward movement of rod 43, against the action exerted by springs 34, causes upward movement of body 27 and, via one of bars 25, upward movement of the hinge point between the bars connecting the bottom portions of rods 3. This results in rods 3 comprising together which, in turn, brings together rods 12. The overall effect is to fold the centre portion of backrest 36 and the base of seat 35 by bringing together elements 41 on the structure supporting backrest 36 and elements 51 on the structure supporting the said base. Furthermore, as the structure supporting backrest 36 tilts forward, bars 52 are brought together by turning clockwise round the hinge point on respective element 51. The said structure, in fact, is connected to bars 52 as already described, by means of elements 62. Consequently, bars 52

follow rotation of the structure supporting backrest 36 round pin 19, i.e. if the said structure turns clockwise by a given angle round pin 19, bars 52 will also turn clockwise through the same angle round the hinge point with element 51 and vice versa. As frame 2 is being folded, sleeves 21 slide upwards. Once the frame has been folded, rods 3 or pins 19 may be secured together by a plate or strap. For setting pushchair 1 back into the working position, the action exerted by springs 34, if not sufficient, may be assisted by sliding rod 43 downwards. The effect of the said springs 34 is to bring bars 25 and body 27 back into the working position, i.e. coaxial with one another. Downward movement of sleeves 21 is arrested when they engage with pins 23.

Backrest 36 is tilted round pin 19 as follows:

Knobs 78 are simply turned clockwise for locking tabs 72 and the centre portion of backrest 36 in the required position. Anticlockwise rotation of knob 78 releases tabs 72, thus enabling the user to tilt backrest 36 as required. Maximum forward or backward tilting of backrest 36 depends, of course, on the longitudinal extension of slot 73 on tab 72. As already mentioned, bars 52 follow the angle of backrest 36 by means of elements 62. In like manner, footplate 53 adapts to the position of the child's feet which adapt to the position of the child's back.

The numerous advantages of the present invention will be clear from the foregoing description. In particular, pushchair 1 provides for easy adjustment of backrest 36. The aforementioned method of locking tab 72 provides for an infinite number of angular adjustments to backrest 36, whereas maximum inclination depends on the longitudinal extension of slot 73. Furthermore, varying the angle of backrest 36 is accompanied by a corresponding variation in the position of footplate 53. Pushchair 1 presents an easy-fold frame 2, the said frame 2 being folded by simply moving rod 43 upwards, with no need to operate any other components on frame 2. Whereas, for setting the pushchair back into the working position, no assistance is needed from the user, if the action exerted by springs 34 is sufficient for the purpose. If it is not, all the user has to do is press lightly down on rod 43. An important point to keep in mind is that, following the aforementioned operation, no assistance is needed for locking pushchair 1 in its assumed position, this being performed automatically and only being released when rod 43 is operated again.

To those skilled in the art it will be clear that changes may be made to pushchair 1 as described and illustrated herein, without, however, departing from the scope of the present invention.

In particular, the system regulating the angle of backrest 36 may be fitted on to a pushchair 1 having a frame other than frame 2. Furthermore, tab 72 may be fitted both inside and outside side wall 37. Finally, tab 72 may have its front end fitted to side wall 37 and a rear portion fittable, by means of screw 74 and knob 78, to backrest 36.

## CLAIMS

1. Pushchair with a reclinable backrest, characterised by the fact that it comprises a frame, a seat  
5 having the said backrest supported on a first structure connected to the said frame, a base, two side walls supported on a second structure hinged to the said first structure in such a manner as to adjust the angle of the latter in relation to the said  
10 second structure, and a body for each of the said side walls for connecting the said backrest to the respective said side wall and so enabling various angular adjustments to be made to the said backrest.
- 15 2. Pushchair according to Claim 1, characterised by the fact that the said body has its rear end fitted to the said backrest and a front portion fittable, via locking means, to the respective side wall.
3. Pushchair according to Claim 1, characterised  
20 by the fact that the said body has its front end fitted to the said side wall and a rear portion fittable, via locking means, to the said backrest.
4. Pushchair according to Claim 2 or 3, characterised by the fact that the said locking means  
25 comprise a knob into which may be screwed a first screw; the said body being inserted between the said knob and the said first screw.
5. Pushchair according to Claim 4, characterised by the fact that the said body comprises a tab with  
30 its longitudinal axis describing an arc of a circle and having, along the said axis, a through slot engaged by a threaded shank on the said first screw.
6. Pushchair according to Claim 5 and depending on Claim 2, characterised by the fact that each  
35 of the said side walls comprises two parallel plates perpendicular to the floor; and said tab being located between the said plates which have a respective hole enabling the said threaded shank to engage, one after the other, the said hole on the  
40 innermost said plate, the said slot and the said hole on the outermost said plate, and to screw into a threaded hole on a second shank on the said knob.
7. Pushchair according to Claim 6, characterised  
45 by the fact that the said frame comprises two first bars supporting a footplate; the said first bars being hinged at the top end to the said second structure, and being hinged at the top portion to the front end of a respective second bar the rear  
50 end of which is hinged to a respective appendix extending downwards from the said first structure.
8. Pushchair according to at least one of the foregoing Claims, characterised by the fact that the said backrest, the said base on the said seat and  
55 the said frame all fold up.
9. Pushchair according to Claim 8, characterised by the fact that the said frame comprises:
  - two first metal rods parallel to each other in the working position, converging with the floor at an  
60 acute angle and the respective bottom end of which supports at least one front wheel;
  - two second metal rods parallel to each other, converging with the floor at an acute angle, each being assigned a corresponding said first rod and  
65 having a bottom end supporting at least one rear

wheel and a top portion hinged on a first pin on which is hinged the mid portion of the respective said first rod;

- 70 two third metal bars, one for each of the said rods, for connecting the bottom portions of the same, and having a respective first end hinged to the respective said first rod, the second ends of the said third bars being hinged to each other or to a first intermediate body;
- 75 two fourth metal bars hinged centrally in cross formation on a second pin and each having a bottom end hinged to a bottom portion of one of the said second rods relative to one of the said first rods, and a top end hinged on a third pin supported on a first sleeve sliding along the other of the said first rods;
- 80 two fifth metal bars, the first having a first end hinged to the fulcrum on which are hinged the second ends of the said third bars or to the said first intermediate body, and a second end hinged directly, or by means of a second intermediate body, to a first end on the other of the said fifth bars, the latter having a second end hinged to the said second pin;
- 90 a third rod sliding axially and having a top end hinged either directly on the hinge point common to the said fifth bars or on a fourth pin supported by the said second intermediate body.
- 95 10. Pushchair according to Claim 9, characterised by the fact that it comprises flexible means designed, in use, to press down the hinge point common to the said fifth bars and the said second intermediate body.
- 100 11. Pushchair according to Claim 10, characterised by the fact that the said flexible means comprise at least one spring the first end of which is fitted to a square supported on the second pin and the second end of which is fitted either to the said hinge point common to the said fifth bars or to the said second intermediate body.
- 105 12. Pushchair according to at least one of the foregoing Claims from 9 to 11, characterised by the fact that it comprises two sixth bars each having a first end hinged to one of the said third bars and a second end hinged to the top end of the said second rod closest to the latter said third bar.
- 110 13. Pushchair according to at least one of the foregoing Claims from 9 to 12, characterised by the fact that the said first rods are hollow and house a bottom portion of a respective fourth rod the top portion of which is covered by a second sleeve designed to act as a handgrip; the said fourth rod sliding axially to enable the user to set the said grips to any required height.
- 115 14. Pushchair according to at least one of the foregoing Claims from 9 to 13, characterised by the fact that the said first structure supports a bracket designed to guide axial sliding of the said third rod which has its said top end covered by a third  
120 sleeve designed to act as a handgrip.
- 125

15. Reclinable pushchair as described and illustrated herein with reference to the attached drawings.

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